FIG. 1 (PRIOR ART)

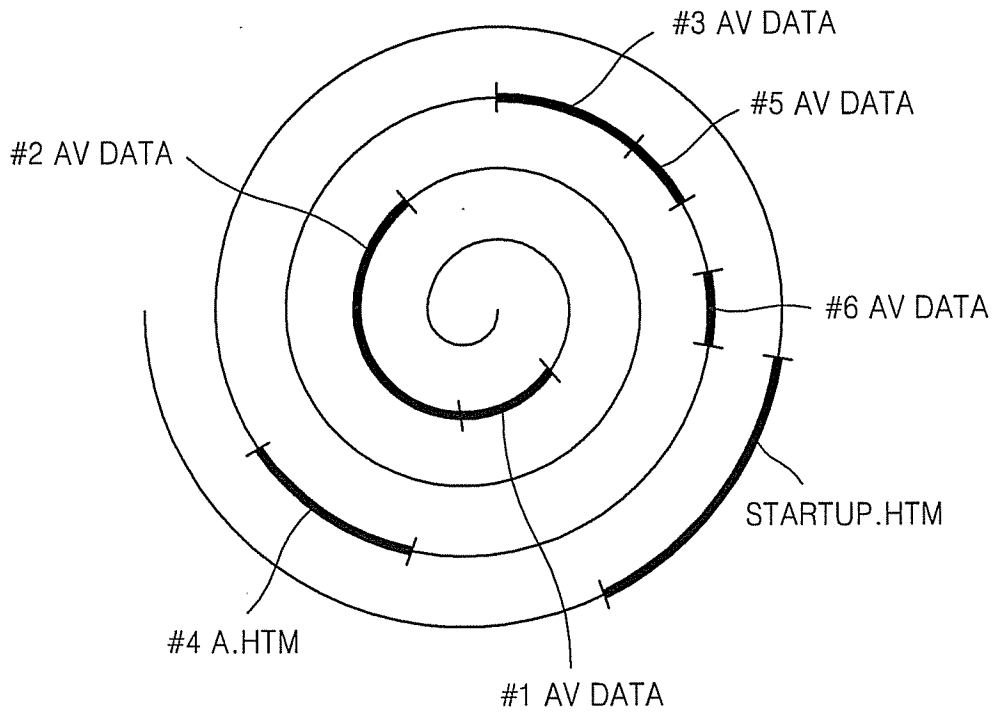


FIG. 2 (PRIOR ART)

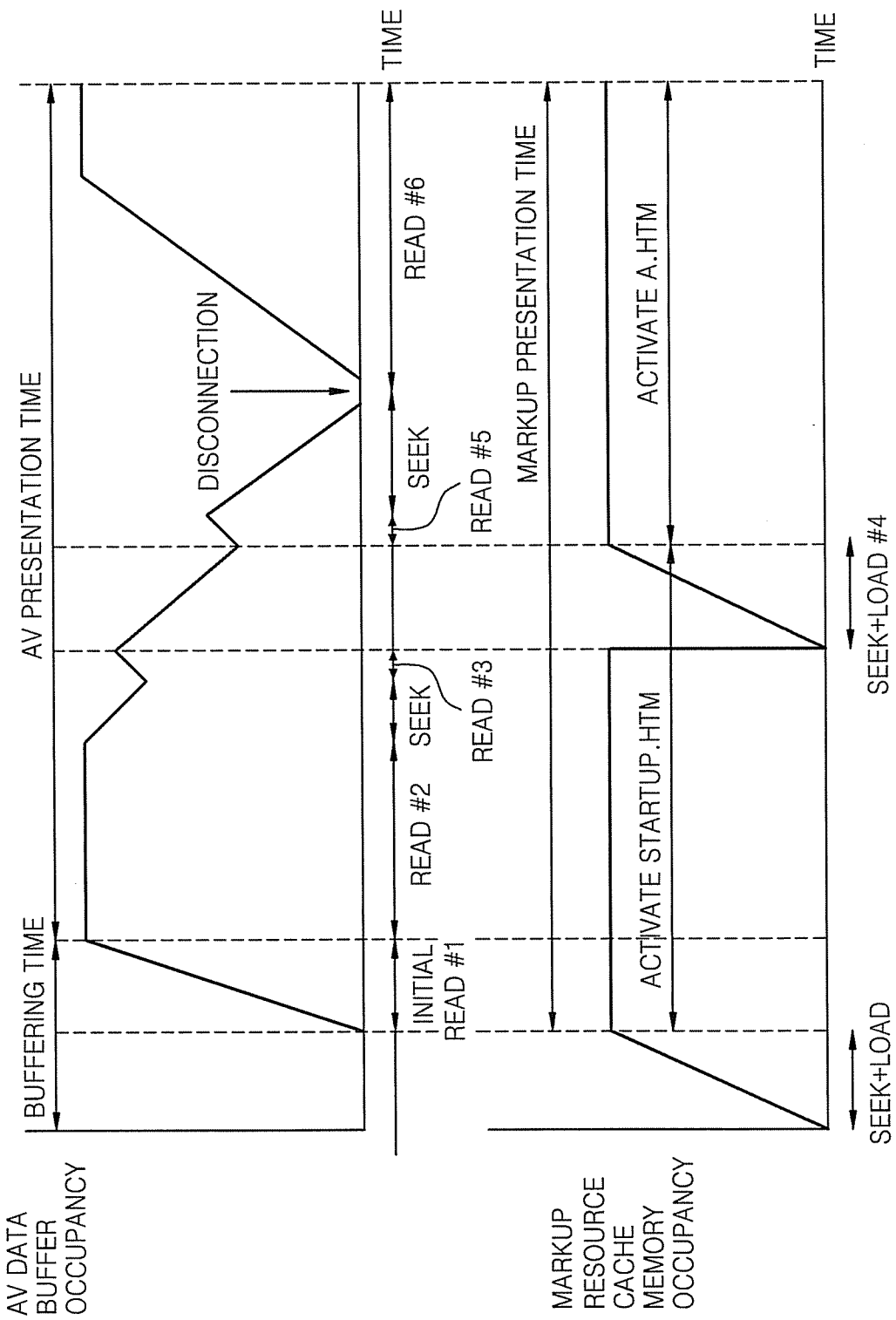


FIG. 3

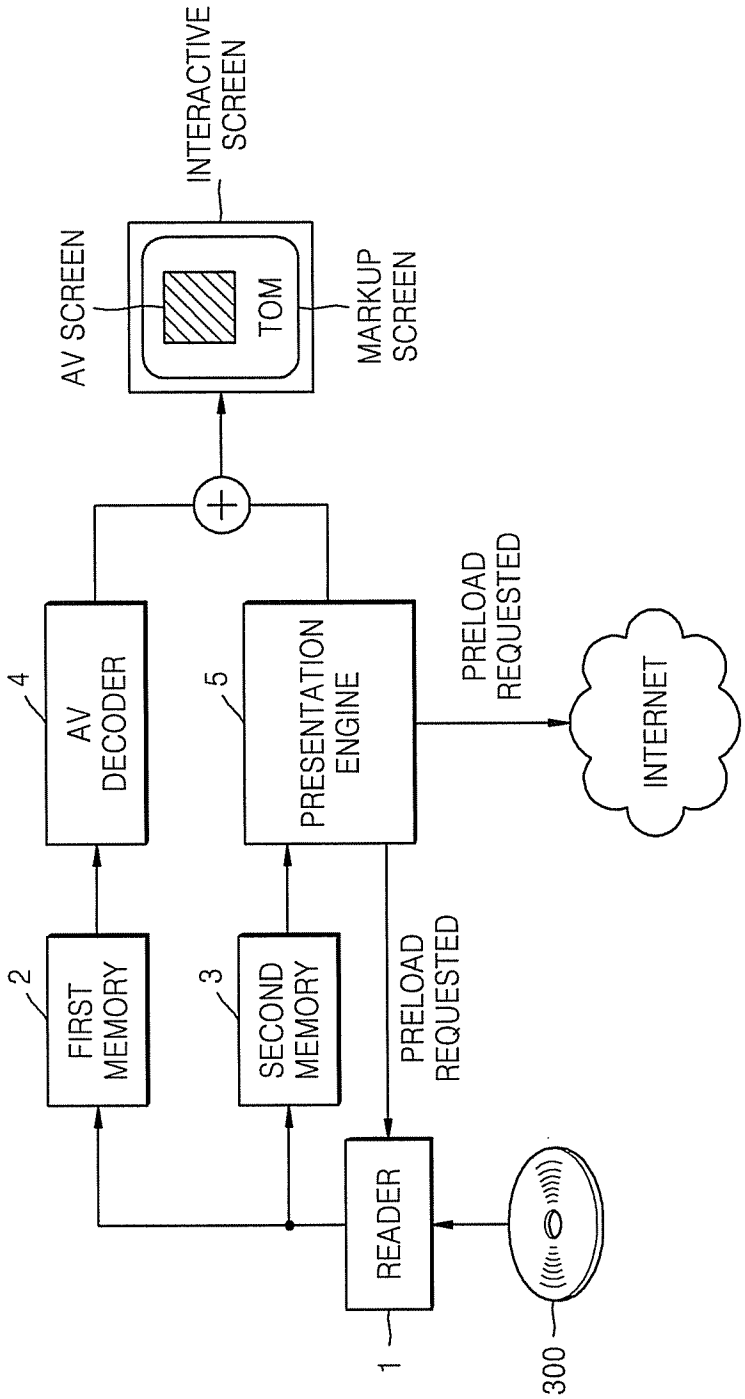

INTERACTIVE SCREEN
AV SCREEN
TOM
MARKUP SCREEN
AV DECODER
4
PRESENTATION ENGINE
5
PRELOAD REQUESTED
INTERNET
FIRST MEMORY
2
SECOND MEMORY
3
PRELOAD REQUESTED
READER
1
300

FIG. 4

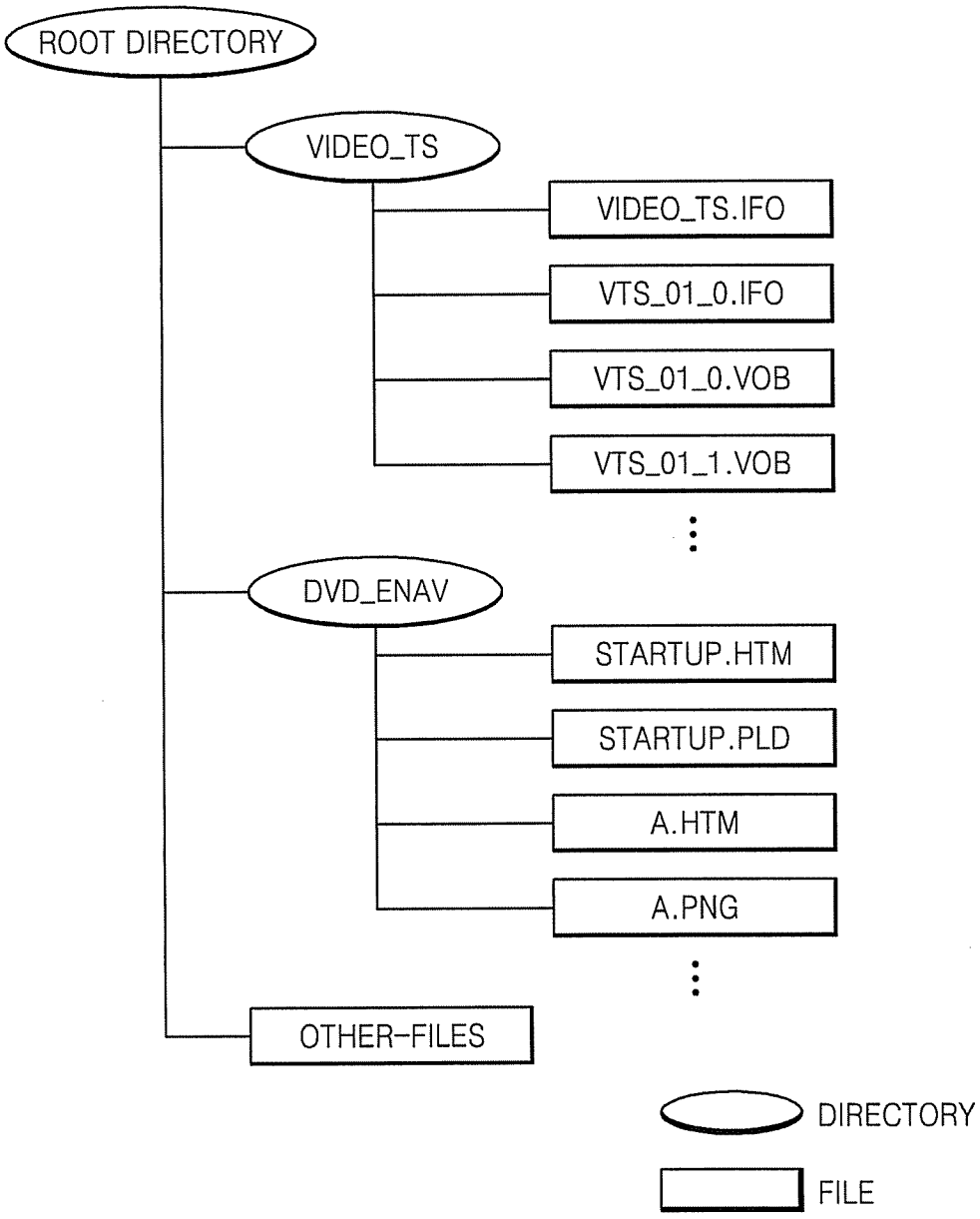

ROOT DIRECTORY
VIDEO_TS
VIDEO_TS.IFO
VTS_01_0.IFO
VTS_01_0.VOB
VTS_01_1.VOB
DVD_ENAV
STARTUP.HTM
STARTUP.PLD
A.HTM
A.PNG
OTHER-FILES
DIRECTORY
FILE

FIG. 5

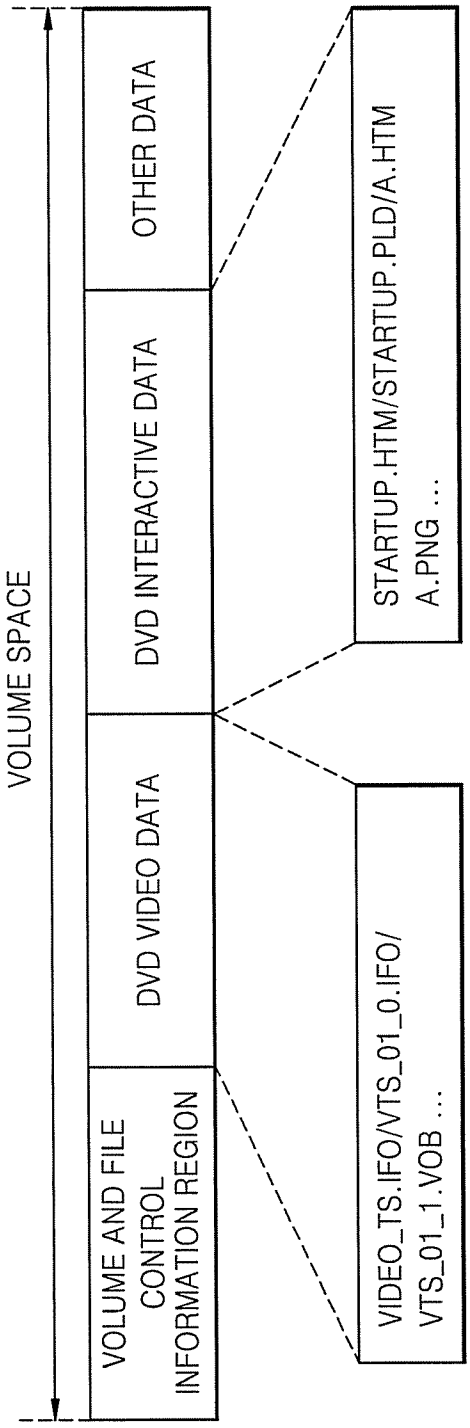

VOLUME SPACE
VOLUME AND FILE CONTROL INFORMATION REGION
DVD VIDEO DATA
DVD INTERACTIVE DATA
OTHER DATA
VIDEO_TS.IFO/VTS_01_0.IFO/
VTS_01_1.VOB ...
STARTUP.HTM/STARTUP.PLD/A.HTM
A.PNG ...

FIG. 6

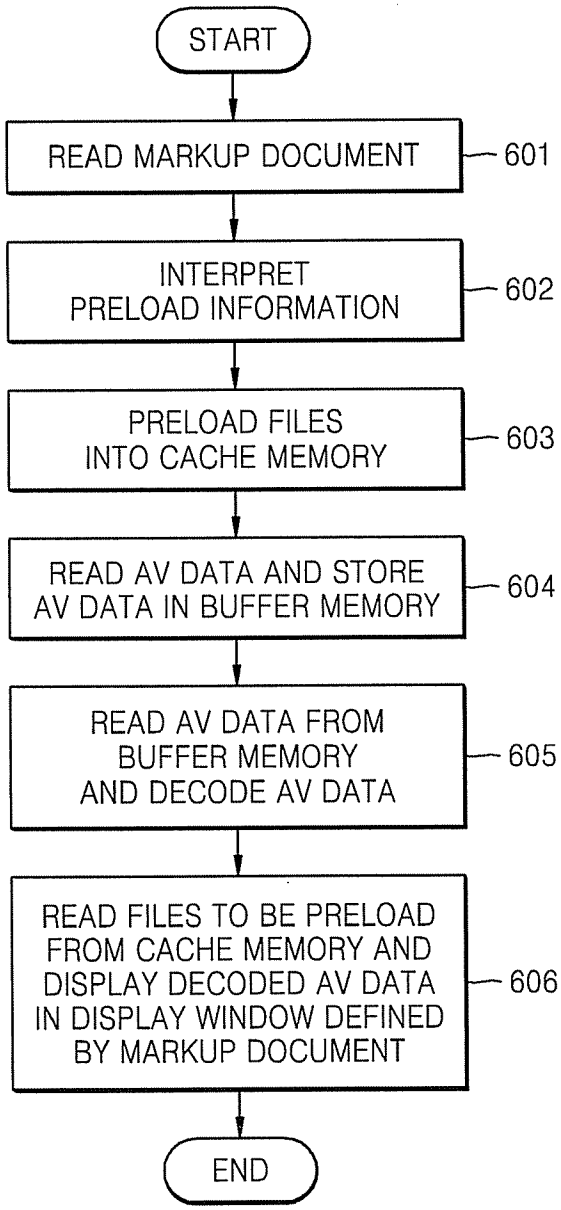

START
READ MARKUP DOCUMENT
601
INTERPRET PRELOAD INFORMATION
602
PRELOAD FILES INTO CACHE MEMORY
603
READ AV DATA AND STORE AV DATA IN BUFFER MEMORY
604
READ AV DATA FROM BUFFER MEMORY AND DECODE AV DATA
605
READ FILES TO BE PRELOAD FROM CACHE MEMORY AND DISPLAY DECODED AV DATA IN DISPLAY WINDOW DEFINED BY MARKUP DOCUMENT
606
END

FIG. 7

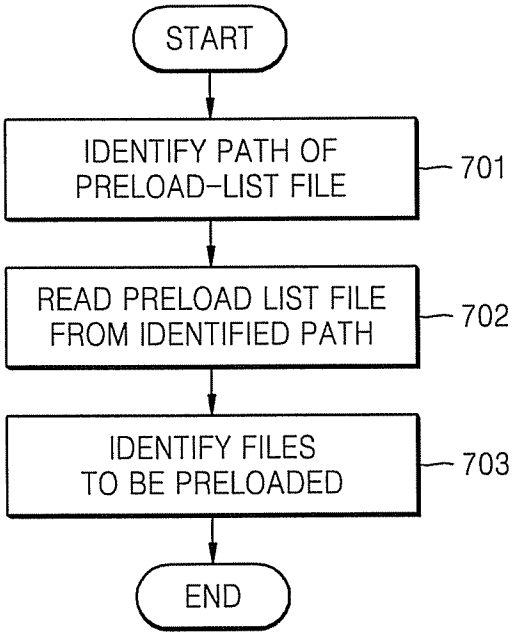

START
IDENTIFY PATH OF PRELOAD-LIST FILE
701
READ PRELOAD LIST FILE FROM IDENTIFIED PATH
702
IDENTIFY FILES TO BE PRELOADED
703
END

FIG. 8

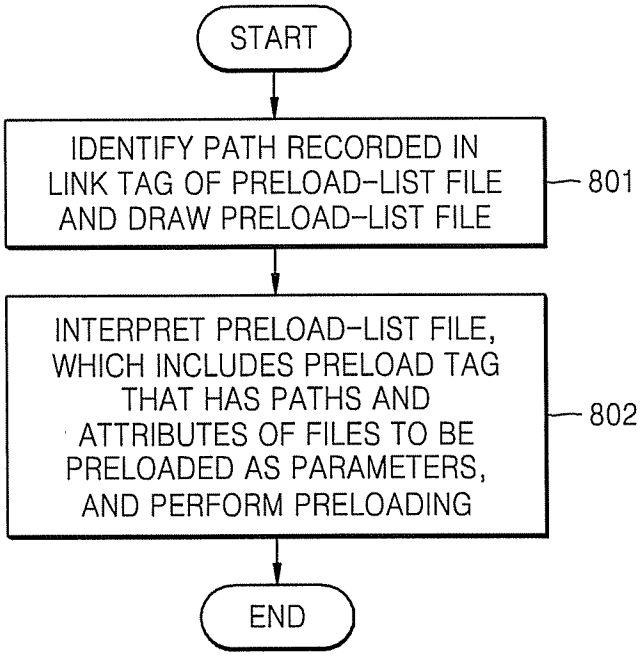

START
IDENTIFY PATH RECORDED IN LINK TAG OF PRELOAD-LIST FILE AND DRAW PRELOAD-LIST FILE
801
INTERPRET PRELOAD-LIST FILE, WHICH INCLUDES PRELOAD TAG THAT HAS PATHS AND ATTRIBUTES OF FILES TO BE PRELOADED AS PARAMETERS, AND PERFORM PRELOADING
802
END

FIG. 9A

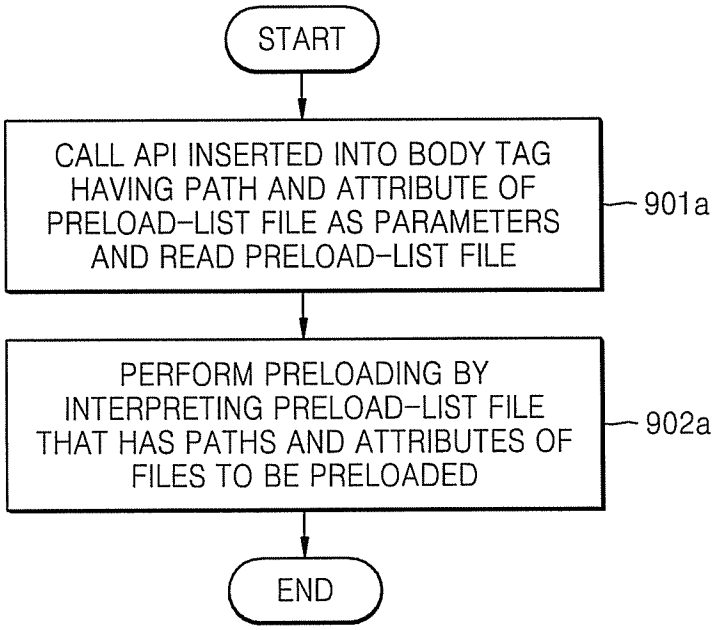

START
CALL API INSERTED INTO BODY TAG HAVING PATH AND ATTRIBUTE OF PRELOAD-LIST FILE AS PARAMETERS AND READ PRELOAD-LIST FILE
901a
PERFORM PRELOADING BY INTERPRETING PRELOAD-LIST FILE THAT HAS PATHS AND ATTRIBUTES OF FILES TO BE PRELOADED
902a
END

FIG. 9B

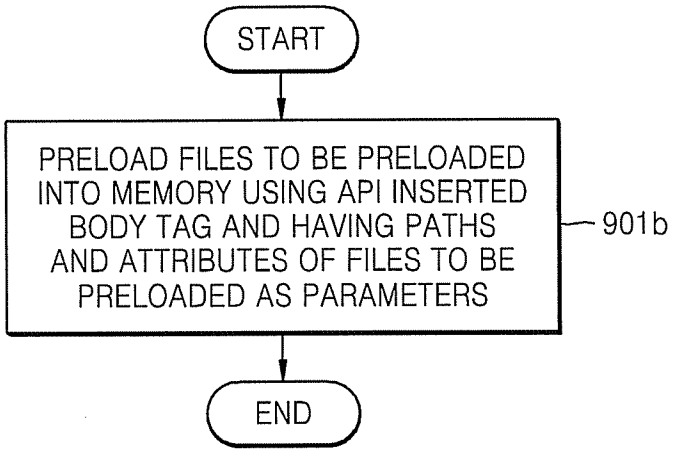

START
PRELOAD FILES TO BE PRELOADED INTO MEMORY USING API INSERTED BODY TAG AND HAVING PATHS AND ATTRIBUTES OF FILES TO BE PRELOADED AS PARAMETERS
901b
END

FIG. 10

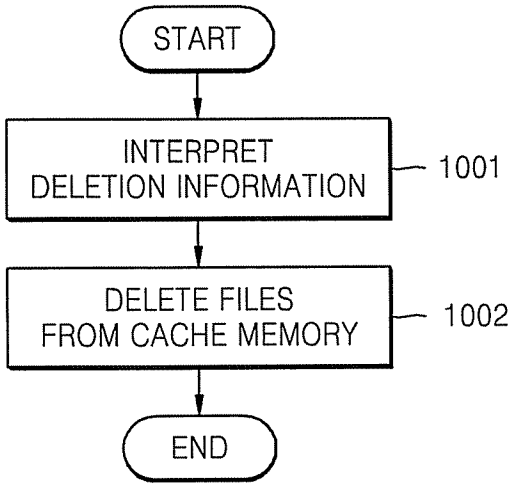

START
INTERPRET DELETION INFORMATION
1001
DELETE FILES FROM CACHE MEMORY
1002
END

FIG. 11

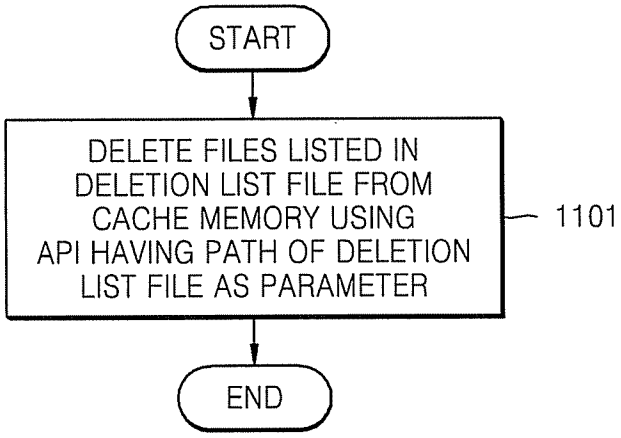

START
DELETE FILES LISTED IN DELETION LIST FILE FROM CACHE MEMORY USING API HAVING PATH OF DELETION LIST FILE AS PARAMETER
1101
END

FIG. 12

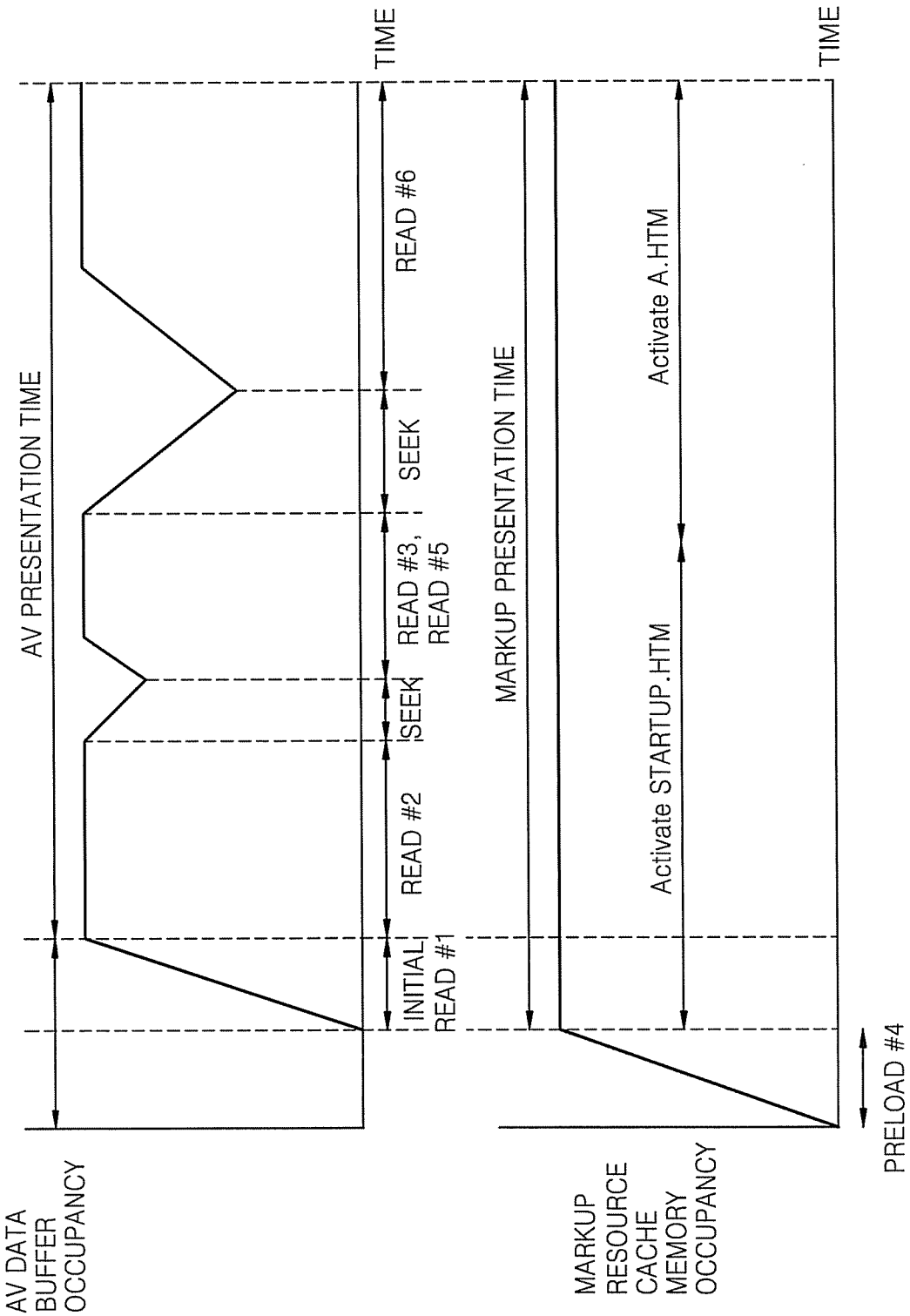

AV DATA BUFFER OCCUPANCY
AV PRESENTATION TIME
TIME
INITIAL READ #1
READ #2
SEEK
READ #3, READ #5
SEEK
READ #6
MARKUP RESOURCE CACHE MEMORY OCCUPANCY
MARKUP PRESENTATION TIME
TIME
Activate STARTUP.HTM
Activate A.HTM
PRELOAD #4

FIG. 13

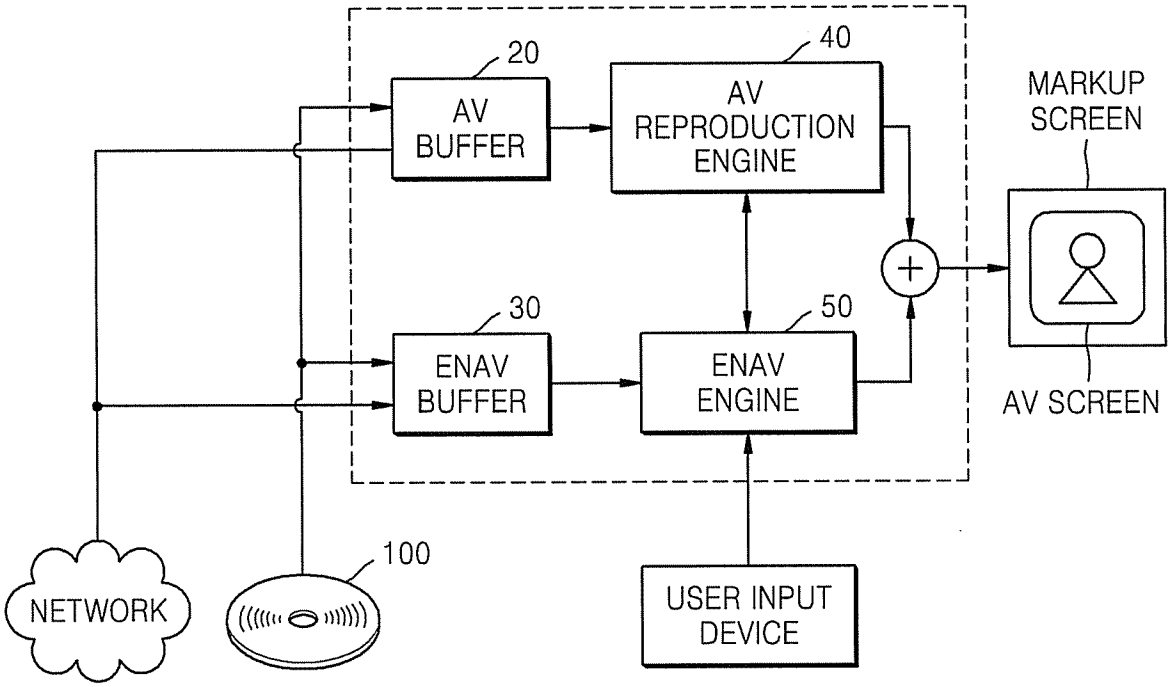

20
AV BUFFER
40
AV REPRODUCTION ENGINE
MARKUP SCREEN
30
ENAV BUFFER
50
ENAV ENGINE
AV SCREEN
NETWORK
100
USER INPUT DEVICE

FIG. 14

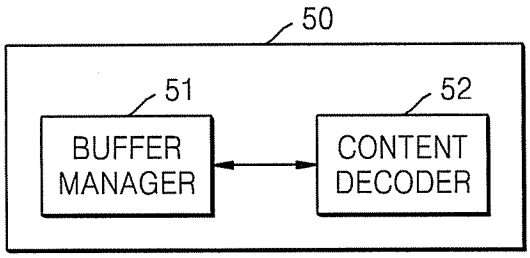

50
51
BUFFER MANAGER
52
CONTENT DECODER

FIG. 15

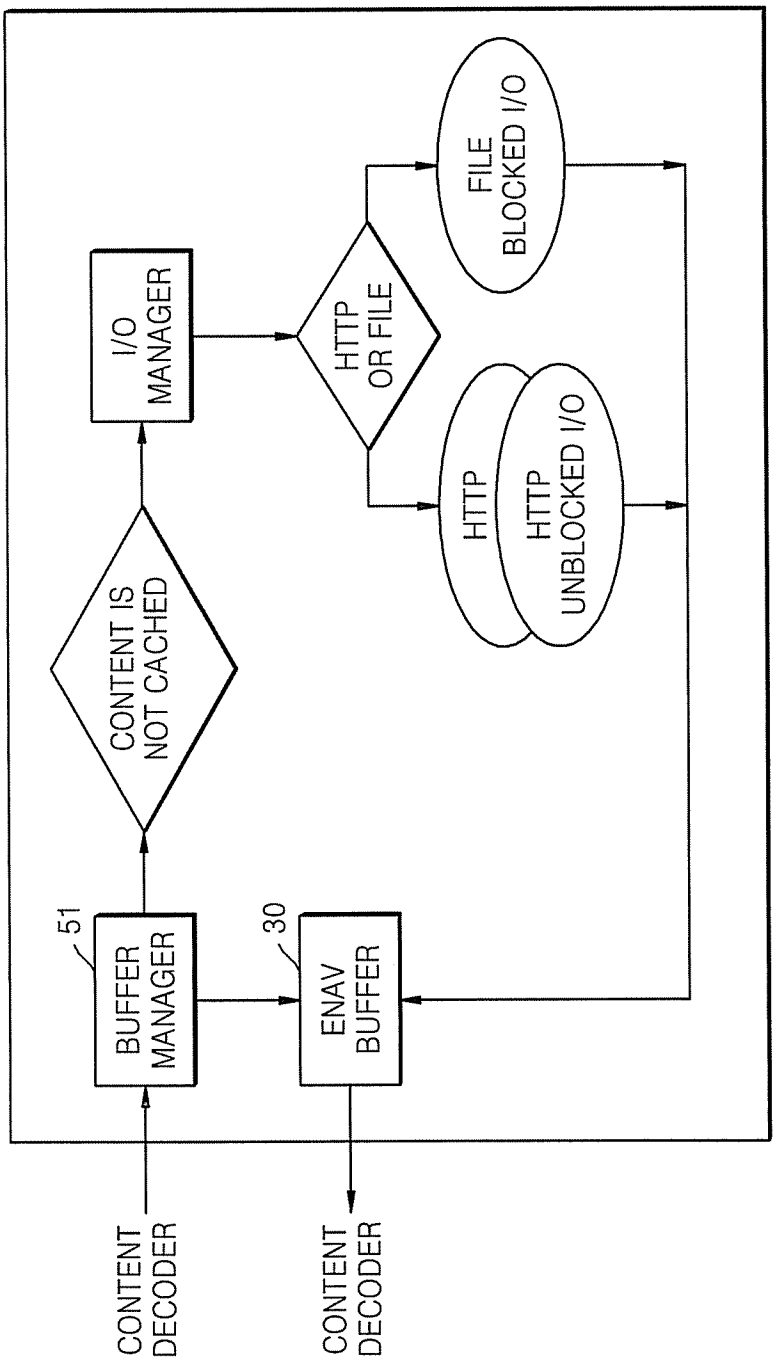

CONTENT DECODER
CONTENT DECODER
51
BUFFER MANAGER
30
ENAV BUFFER
CONTENT IS NOT CACHED
I/O MANAGER
HTTP OR FILE
FILE BLOCKED I/O
HTTP
HTTP UNBLOCKED I/O

FIG. 16

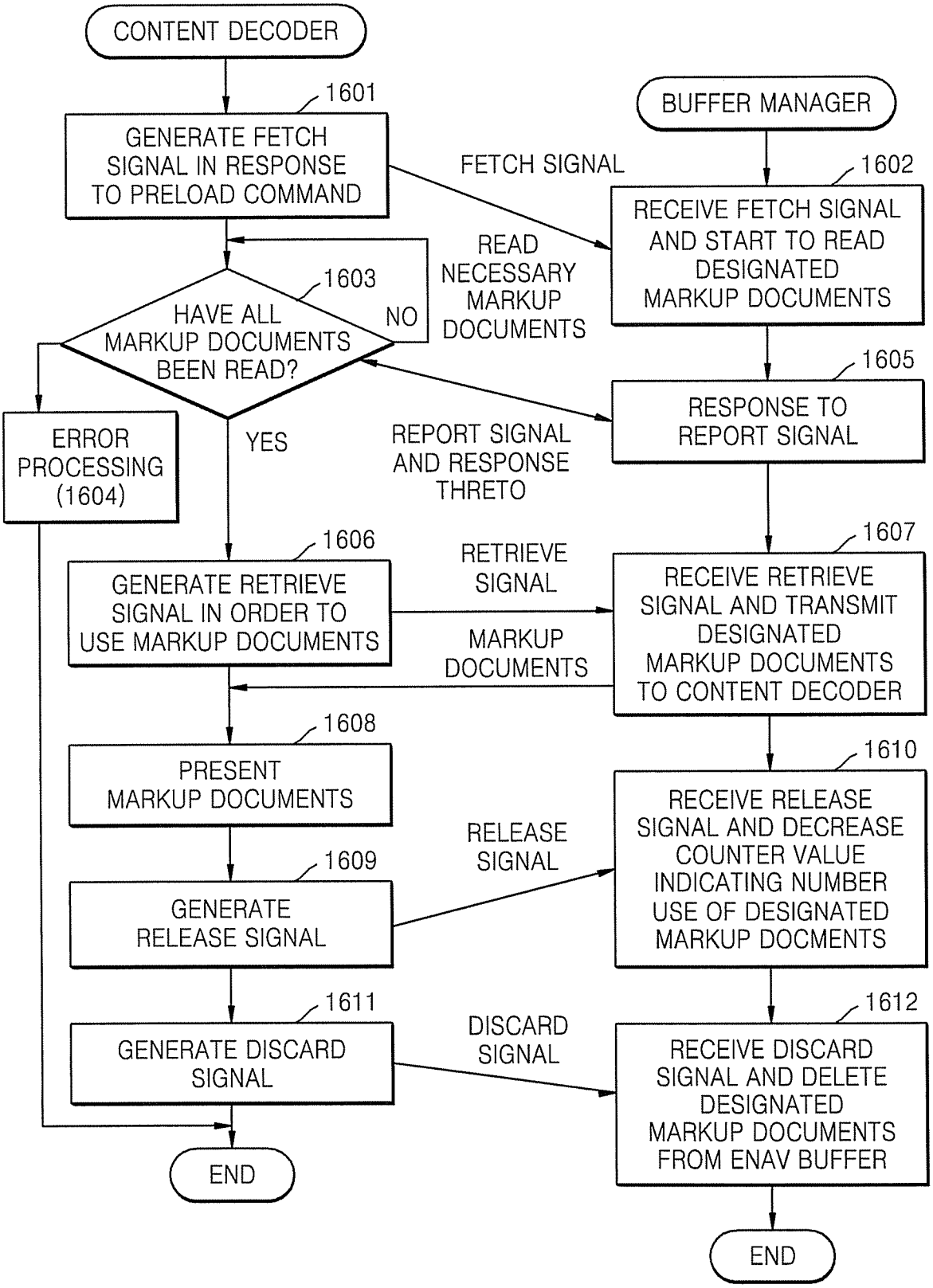

CONTENT DECODER
1601
GENERATE FETCH SIGNAL IN RESPONSE TO PRELOAD COMMAND
FETCH SIGNAL
BUFFER MANAGER
1602
RECEIVE FETCH SIGNAL AND START TO READ DESIGNATED MARKUP DOCUMENTS
READ NECESSARY MARKUP DOCUMENTS
1603
HAVE ALL MARKUP DOCUMENTS BEEN READ?
NO
YES
ERROR PROCESSING (1604)
1605
RESPONSE TO REPORT SIGNAL
REPORT SIGNAL AND RESPONSE THRETO
1606
GENERATE RETRIEVE SIGNAL IN ORDER TO USE MARKUP DOCUMENTS
RETRIEVE SIGNAL
1607
RECEIVE RETRIEVE SIGNAL AND TRANSMIT DESIGNATED MARKUP DOCUMENTS TO CONTENT DECODER
MARKUP DOCUMENTS
1608
PRESENT MARKUP DOCUMENTS
1610
RECEIVE RELEASE SIGNAL AND DECREASE COUNTER VALUE INDICATING NUMBER USE OF DESIGNATED MARKUP DOCMENTS
RELEASE SIGNAL
1609
GENERATE RELEASE SIGNAL
1611
GENERATE DISCARD SIGNAL
DISCARD SIGNAL
1612
RECEIVE DISCARD SIGNAL AND DELETE DESIGNATED MARKUP DOCUMENTS FROM ENAV BUFFER
END
END

FIG. 17

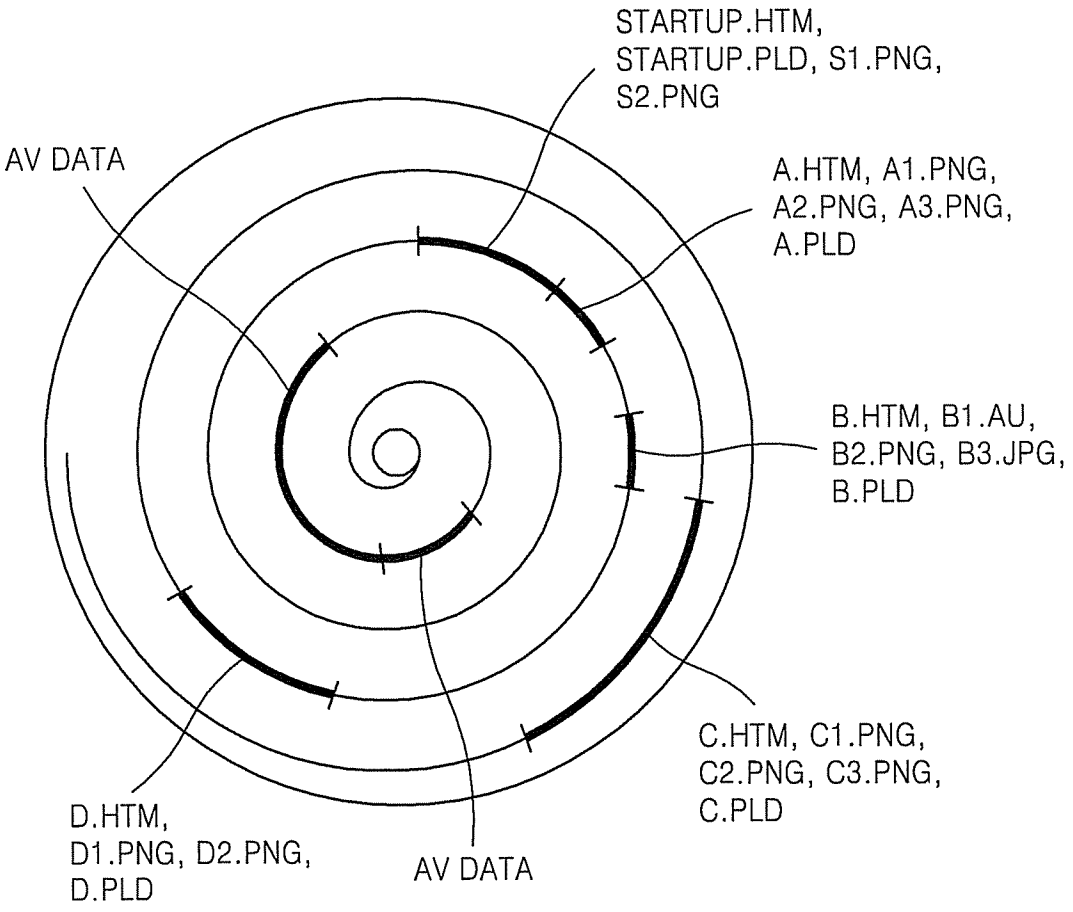

STARTUP.HTM,
STARTUP.PLD, S1.PNG,
S2.PNG
AV DATA
A.HTM, A1.PNG,
A2.PNG, A3.PNG,
A.PLD
B.HTM, B1.AU,
B2.PNG, B3.JPG,
B.PLD
C.HTM, C1.PNG,
C2.PNG, C3.PNG,
C.PLD
D.HTM,
D1.PNG, D2.PNG,
D.PLD
AV DATA

FIG. 18

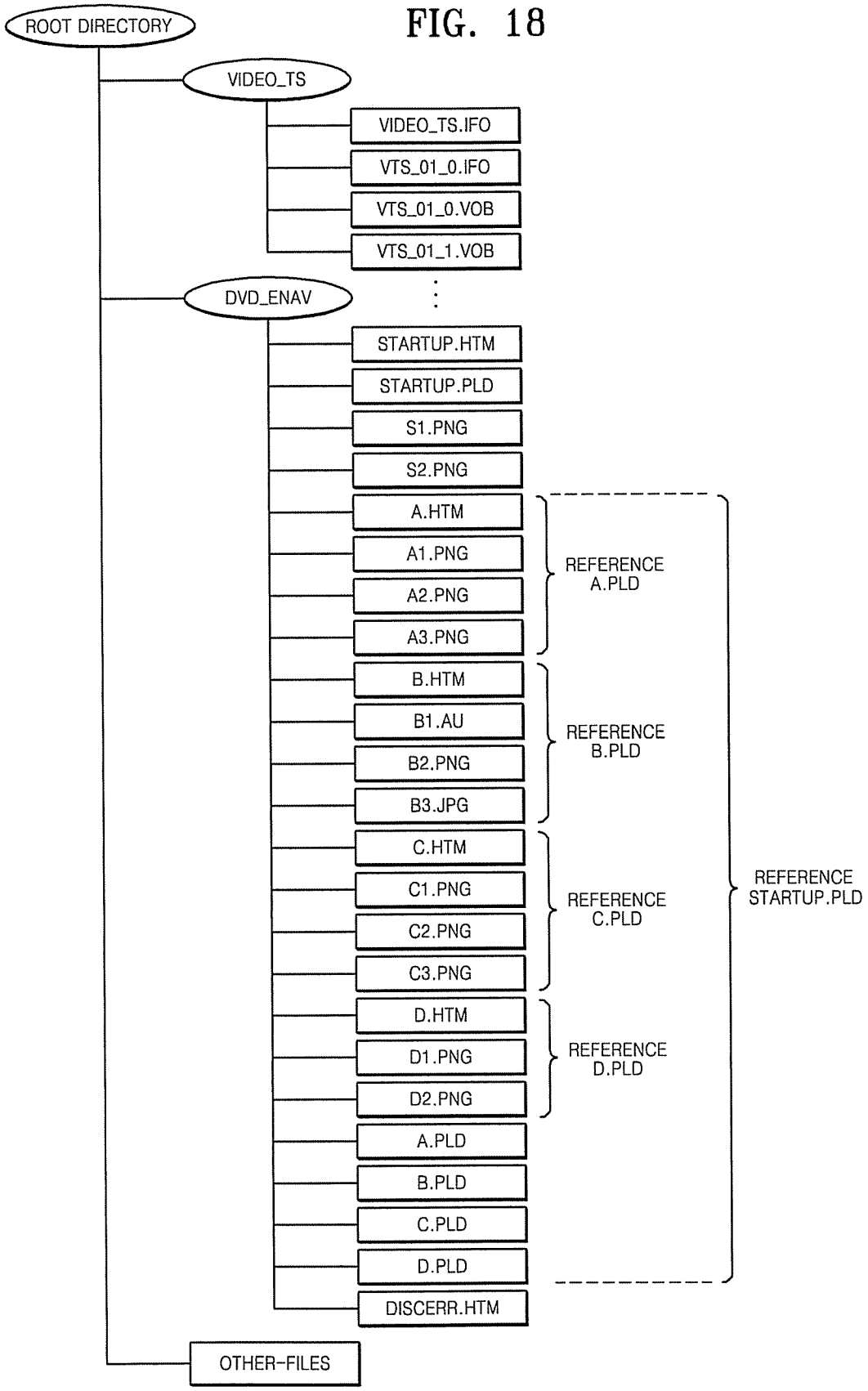

ROOT DIRECTORY
VIDEO_TS
VIDEO_TS.IFO
VTS_01_0.IFO
VTS_01_0.VOB
VTS_01_1.VOB
DVD_ENAV
STARTUP.HTM
STARTUP.PLD
S1.PNG
S2.PNG
A.HTM
A1.PNG
A2.PNG
A3.PNG
REFERENCE A.PLD
B.HTM
B1.AU
B2.PNG
B3.JPG
REFERENCE B.PLD
C.HTM
C1.PNG
C2.PNG
C3.PNG
REFERENCE C.PLD
D.HTM
D1.PNG
D2.PNG
REFERENCE D.PLD
A.PLD
B.PLD
C.PLD
D.PLD
DISCERR.HTM
REFERENCE STARTUP.PLD
OTHER-FILES

FIG. 19

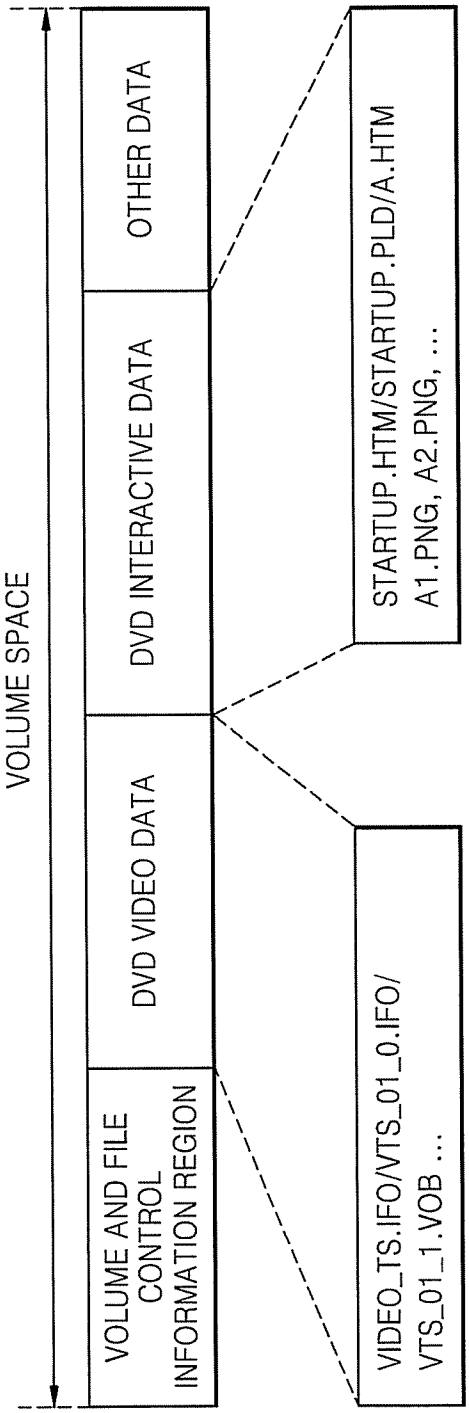
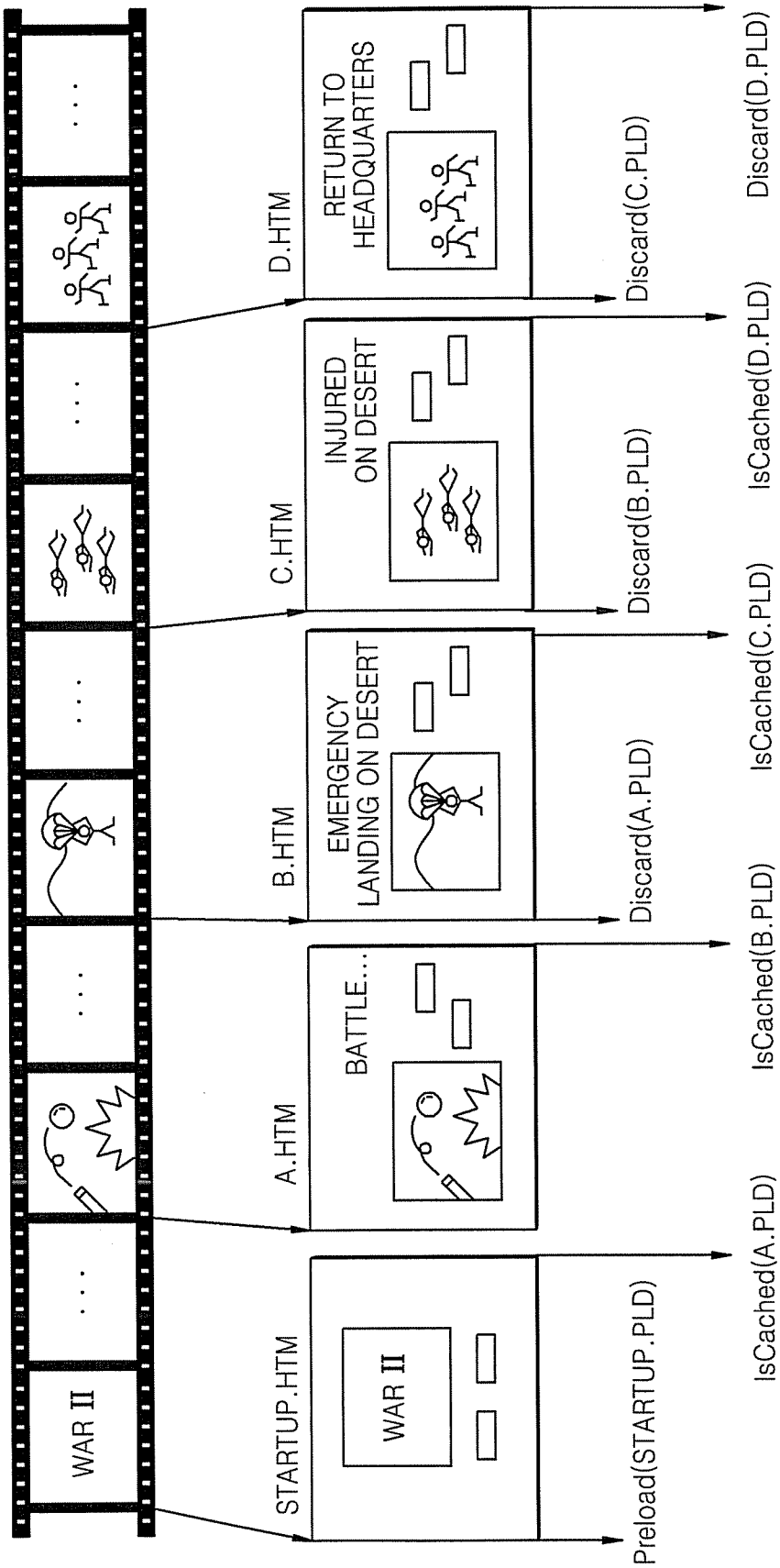

VOLUME SPACE
VOLUME AND FILE CONTROL INFORMATION REGION
DVD VIDEO DATA
DVD INTERACTIVE DATA
OTHER DATA
VIDEO_TS.IFO/VTS_01_0.IFO/
VTS_01_1.VOB ...
STARTUP.HTM/STARTUP.PLD/A.HTM
A1.PNG, A2.PNG, ...

FIG. 20


WAR II
STARTUP.HTM
WAR II
Preload(STARTUP.PLD)
A.HTM
BATTLE...
IsCached(A.PLD)
B.HTM
EMERGENCY LANDING ON DESERT
Discard(A.PLD)
IsCached(B.PLD)
C.HTM
INJURED ON DESERT
Discard(B.PLD)
IsCached(C.PLD)
D.HTM
RETURN TO HEADQUARTERS
Discard(C.PLD)
IsCached(D.PLD)
Discard(D.PLD)